Claims

1. A method for fractionating plasma or serum, wherein the starting solution, containing the plasma or serum, is subjected to a hydrophobic interaction chromatography and, by using a stepwise salt gradient, divided into at least one immunoglobulin-containing fraction and one albumin-containing fraction.

2. The method of claim 1, wherein a plasma or serum of human or animal origin is used as starting material.

3. The method of claims 1 or 2, wherein an ammonium sulfate gradient is used for the chromatography.

4. The method of claim 3, wherein the chromatography commences at a high concentration of ammonium sulfate, which is lowered in the next step of the fractionation.

5. The method of one of the claims 3 or 4, wherein the high concentration of ammonium sulfate is between 0.6 and not more than 1.4 moles/L and the low ammonium concentration is between 0 and 0.4 moles/L.

6. The method of one of the claims 3 to 5, wherein the high concentration of ammonium sulfate buffer is 0.7 to 1 moles/L, which is lowered to 0 to 0.3 moles/L.

7. The method of one of the claims 1 to 6, wherein the starting solution and the chromatography phase are adjusted to the desired high salt gradient concentration at the start of the fractionation.

8. The method of one of the claims 1 to 7, wherein the clotting factors of the PPSB complex are removed from the plasma.

9. The method of one of the claims 1 to 8, wherein a plasma, freed from clotting factor VIII, is used as starting material.

10. The method of one of the claims 2 to 9, wherein polyvalent human plasma is used as a starting material.

11. The method of one of the claims 2 to 9, wherein selected human plasma, selected with respect to viral, bacterial or antibodies, directed against cellular antigens, is used as starting material.

12. The method of one of the claims 1 to 11, wherein, after the first fraction, two further fractions are obtained by means of step gradients.

13. The method of claim 12, wherein, after the first fraction, the fractionation commences with an ammonium sulfate buffer having a concentration of 0.4 to 0.1 moles/L, which is then lowered to less than 0.1 to 0 moles/L.

14. The method of one of the claims 1 to 13, wherein phenyl-substituted or alkyl-substituted phases, based on copolymers of glycidyl methacrylate and ethylene glycol dimethacrylate, copolymers of polystyrene or divinylbenzene or silica, coated with dextran or polymers, are used as hydrophobic interaction phase.

15. The method of claim 14, wherein copolymers of glycidyl methacrylate and ethylene glycol dimethacrylate are used as hydrophobic interaction phase.

16. The method of claims 14 or 15, wherein the high concentration of ammonium sulfate buffer is 0.8 to 1.0 moles/L and the lowered concentration of ammonium sulfate is 0.3 to 0 moles/L.

17. The method of claim 16, wherein the first fraction is obtained at an ammonium sulfate concentration of 0.9 moles/L and, after that, a step gradient is employed, the ammonium sulfate concentration initially being 0.3 moles/L and then lowered to 0 moles/L.

18. The method of one of the claims 1 to 17, wherein the first fraction obtained is worked up in a known manner and therapeutically usable antithrombin III, transferrin and/or albumin are obtained.

19. The method of claim 18, wherein the first fraction obtained is worked up by affinity chromatography followed by anion exchange chromatography and virus inactivation as well as the usual filtering, concentrating and sterilizing steps.

20. The method of one of the claims 1 to 18, wherein the second fraction obtained is worked up in a known manner and therapeutically usable immunoglobulin, especially IgG, is obtained.

21. The method of claim 20, wherein the second fraction obtained is worked up by anion exchanger chromatography, virus inactivation, octanoic acid treatment, as well as cation exchanger chromatography and the usual filtering, sterilizing and concentrating steps into a compatible immunoglobulin G preparation.

22. A recycling method for fractionating plasma or serum of one of the claims 1 to 16, wherein the permeate from the first fraction obtained is supplied continuously to the ammonium sulfate buffer reservoir with the buffer solution 1, the first fraction obtained is collected and the second fraction is eluted and removed

continuously by producing a mixed buffer from the buffer solution 1 and an ammonium sulfate-free buffer solution 2 or by using only the buffer 2.

23. The method of claim 22, wherein, after the first fraction is eluted, the chromatographic column is treated with a step gradient and a second and third fraction are obtained in this manner.

24. The method of one of the claims 22 or 23, wherein, after each recycling cycle, the interaction chromatography phase is treated with sodium hydroxide solution from a reservoir 3.

25. The method of one of the claims 22 to 24, wherein the first fraction obtained is worked up in a known manner and therapeutically usable antithrombin III, transferrin and/or albumin are obtained.

26. The method of one of the claims 22 to 24, wherein the second fraction obtained is worked up in a known manner and therapeutically usable immunoglobulin, especially IgG, is obtained.

27. An immunoglobulin preparation, obtained by the method of claims 20, 21 or 26.

28. An antithrombin III preparation, obtained according to claim 18, 19 or 25.

29. The use of an immunoglobulin preparation or an antithrombin III, albumin or transferrin preparation, obtained according to the method of one the claims 1 to 28, for therapeutic application.